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PROCEEDINGS OF THE FOURTH ANNUAL MEETING OF THE WESTERN PSYCHOLOGICAL ASSOCIATION, STANFORD UNIVERSITY, CALIFORNIA, AUGUST 8 AND 9, 1924.

W. R. MILES, STANFORD UNIVERSITY, CALIFORNIA, SECRETARY.

The fourth annual conference met this year independently of other scientific associations. All officers were present, but it happens in this association that office holdings and business meetings are very secondary concerns in comparison with the four sessions arranged for the presentation of scientific reports. Our program was unique in at least one respect, that each of the 20 or more persons who were down for papers, appeared and read on the subject announced.

The registered attendance was 60 and there were several who did not bother with the formality of registering. The majority of the group were professionally interested in Psychology. Sessions were open to the University public and were well attended by students and other visitors. Some 15 colleges and universities were represented by one or more faculty members of their psychology departments. The meeting profited especially by the attendance of several visiting psychologists from the Central and Eastern states.

Professor Calvin P. Stone served as local committeeman on arrangements for entertainment. The lodging quarters were provided in a new dormitory, Branner Hall, which was turned over to the psychologists for their exclusive use. Following the afternoon session on August 8, tea was served at the Stanford Psychological Laboratory and visitors were welcomed to inspect everything from the Thomas Welton Stanford Collection of psychic literature and

materials to the colony of monkeys. A routing sheet was provided to assist in finding the various demonstrations. In the evening there was an informal dinner at the Stanford Union. There were 67 tickets sold for the dinner, but a somewhat larger group listened to the address which followed it, delivered by the President of the Association, Professor Edmund S. Conklin, on "The Classification of Personalities." Subsequent to this address various items of news and comments on happenings in the psychological world were volunteered by different individuals present. A message of greeting was sent to the psychologists meeting as Section J (Psychology) of the British Association for the Advancement of Science which was meeting at Toronto August 13–16, and reciprocal greetings were received from them.

The officers elected for the year 1924–25 are the following: President, Dr. Arthur H. Sutherland, 977 West 42nd Street, Los Angeles; Vice-President, Professor Raymond H. Franzen, University of California, Berkeley; Secretary-Treasurer, Professor W. R. Miles, Stanford University. The 1925 meeting will be held at University of California, Berkeley, July 24–25. The secretary invites correspondence with psychologists who may plan to attend that gathering.

ABSTRACTS OF PAPERS

The Geography of Intelligence. Raymond H. Franzen, University of California, Berkeley.

Various age and grade groups in a western city were measured with various tests and differences between schools in average and spread were tabulated. Correlation of disparity of schools in group-trait discriminations reveal a consistent character which is correlated with real estate values and income of parents. For instance, the position of schools relative to others by measurement of twelve-year-olds in Wylie Opposites may be predicted by their position by measurement of kindergarten children in the Park-Franzen.

Character and Personality Traits of Gifted Children. Lewis M. Terman, Stanford University.

Somewhat more than 600 representative gifted children of I.Q. 140 and above, were compared with about the same number of unselected children in (1) scores on a battery of character tests; (2) scores in the Wyman test of social, intellectual and activity interests; (3) rat-

ings by parents and teachers on 25 traits; (4) interest in and knowledge of plays, games and amusements.

(1) The character tests, selected from tests arranged and validated by Voelker, Cady, and Rauberheimer, included two overstatement tests, a test of honesty in the face of temptation to cheat, tests of interest in questionable books and questionable companions, a test of social attitudes, and the Woodworth-Cady questionnaire—test of emotional stability. In all of these tests the gifted group, age for age, greatly excelled the control group.

(2) The Wyman interest test is based on free association method. It has a very high reliability coefficient and correlates as well with the best obtainable criteria as did the intelligence tests of a few years ago. In activity interest the gifted and control groups are about equal, but the gifted are greatly superior to the control in the strength of both their intellectual and their social interests.

(3) The mean play information quotient of the gifted is 136. On the basis of the play preferences of unselected boys and girls, masculinity indices were worked out for ninety plays and games. These indices made it possible to derive masculinity ratings of the gifted children, based upon the masculinity of the games which they like and practice. The mean masculinity rating of the gifted boys was above the norm.

(4) The trait ratings showed good agreement between parents and teachers with respect to the traits in which gifted most excel unselected children. The order, from greatest to least superiority, is intellectual traits, volitional traits, moral traits, social traits, and mechanical ability.

The conclusion seems to be justified that in so far as gifted children deviate from unselected children in character and personality traits, the deviation tends to be in the direction of the ideal. However, the amount of deviation differs greatly for different traits.

The Intellectual Factor in Children's Drawings. FLORENCE L. GOODENOUGH, Stanford University.

The experiment described was undertaken with the object of determining the extent to which the nature of the drawings made by children in their early years is conditioned by intellectual development. Previous investigations have suggested that these drawings may afford a valuable index to the nature and organization of the child's mental processes, and may thus throw light on some of the characteristics of mental growth. It was therefore believed that a

special study of the intellectual factors shown in children's drawings might prove to be especially useful in the analysis of mental function, and in the study of race, sex, and individual differences. In order to carry out an investigation of this kind, it was necessary, first, to construct a scale for measuring intelligence as shown in drawing. For this purpose drawings of the human figure have been found to be most suitable. By means of objective analysis and comparison of the drawings of several thousand children of different ages and varying educational achievement, a method of scoring has been derived which has proved serviceable as a measure of general intellectual maturity. The nonverbal nature of the test makes it especially suitable for studying the mentality of children from foreign homes and of deaf children.

The scale has an average reliability of .77 for ages five to ten years considered separately. The standard error of estimate of a true score ranges from 5.3 months of mental age for five-year-old girls to 8.5 months of mental age for nine-year-old girls. The standard error of estimate of an I.Q. based on the drawing scale is approximately 8 points at all ages from five to ten years. The correlation between Stanford-Binet I.Q. and drawing I.Q. was found to be .741 for a group of 334 cases for which the standard deviation of the Binet I.Q. distribution was 19.1.

The Validity of Self-Estimate. EUGENE SHEN, Stanford University.

Taking the average rating of an individual by a group of six or seven judges (self included) as a criterion and comparing it with his self-estimate, three measures of errors of self-estimate were derived: a total error, a systematic error, and a chance error. For twenty-six individuals on eight traits, the average total error of self-estimate (.72) was larger than the average standard error of rating associates (.59). The systematic errors according to traits were mostly positive, but rather small on the average ($\pm$.25), so that after due regression the average chance error (.65) remained larger than the average standard error of rating associates. But when the systematic errors were calculated according to individuals, their average became much more significant ($\pm$.41), and after regression the average chance error (.40) was considerably smaller than the average total error. The tendency of over- or under-estimation of the self is thus a function more of the individual than of the trait, and taking this into consideration the relative inaccuracy of self-estimate is only illusive.

The Determiners of Animal Learning. EDWARD C. TOLMAN, University of California, Berkeley.

The purpose of the present paper is to indicate what seems to the writer, at the present stage of things, a fruitful conceptual system for thinking about and explaining the experimental facts of animal learning. This system would not limit itself to, nor focus directly upon, the usual physiological concepts of stimulus, neural excitement, synaptic resistance and resultant muscle contraction. It would, rather, talk at first hand about the activities of *purpose* and *cognition* as these reveal themselves directly and immediately in behavior and in learning. In so doing, it would not deny the eventual possibility and desirability of translating its own concepts of purpose and cognition into the more ultimate terms of physiology. It would merely claim that, at present, such a translation is very largely impossible, and the attempt to make it, misleading and unfruitful.

To be more specific, the present paper asks you to envisage the facts of animal learning (and indeed of human learning as well) in terms of: (1) a goal-seeking; (2) a set of innate or acquired exploratory tendencies which this goal-seeking releases; and (3) a set of cognitions as to *how to reach* the goal, cognitions which are progressively acquired because of and during the activity of the exploratory tendencies. Experiments on animal learning would then be classified, or new experiments suggested, because of their bearing upon the nature of, or the conditions determining, one or the other of these factors. Or, to put it in other words, all experimental work on learning will be found to seek an answer for one or the other of the three questions: (1) What are the defining elements of the goal-seeing which gives rise to a given learning? (2) What are the defining characters, and what the extent, of the exploratory tendencies, and what their functional dependence, if any, upon the different types of goal sought? And, finally, (3) What are the defining natures of, and the causal factors determining, the resulting cognitions of "how to get there"?

The body of this paper will recall to you actual experiments, accounts of which are already in the literature; will briefly describe other experiments performed in the California laboratory, but as yet unpublished; and, finally, will suggest new experiments which ought to be performed; all tending to throw further light upon and to emphasize these three questions, as the latter may be raised for the specific case of maze-learning and of rats.

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The Problem of Psychoneural Set. PAUL T. YOUNG, University of Illinois, Urbana.

Animals frequently assume and maintain bodily attitudes which anticipate overt behavior. These postures involves a temporary setting of the neuromuscular mechanism. A similar setting probably takes place whenever an individual receives an instruction but in this case the setting may not be outwardly observable. The meaning of a set may be expressed in words even though the nature of the neural mechanism be unknown. Psychoneural sets condition human experience as well as behavior and their study is therefore important for all types of psychology.

Psychological Systems in Their Relationship to Selling. EDWARD K. STRONG, JR., Stanford University.

A perusal of the literature on advertising and selling leads to the conclusion that there are three definitely formulated theories as to how to influence one to buy.

The first theory is expressed by the five words: "attention, interest, desire, action, satisfaction." There is implied here that the prospect must successively experience these five conscious states; and emphasis is put upon establishing them.

The second theory is expressed by the slogan, "appeals—response," and is a direct application of behavioristic psychology.

The third theory is expressed by the terms, "wants, solution, action, satisfaction."

In the second theory emphasis is put upon what the seller presents, upon the external factors in the total situation affecting the buyer; in the third theory, on the other hand, emphasis is put upon the internal factors—the wants, plans, aspirations of the prospective buyer. Selling in the latter case is a process of calling to the prospect's mind some one or more of his wants and showing how they may be satisfied by buying the seller's goods. The term "action" in the formula implies that the seller must more or less force the issue at the end; also that the prospect must not only buy but also use the commodity, and that the seller must make sure that he can and will use it correctly. Satisfaction is, finally, most important because, unless the goods measure up to expectations, there will be no repeat orders.

Description of Eidetic Phenomena. HEINRICH KLÜVER, Stanford University.

The nature of AB (Anschauungsbilder, percept-images) is illustrated by referring to certain parts of an experimental study with a group of "Eidetiker" consisting of students of Stanford University and State Teachers' College, San José, and of pupils of grade 6A in a Palo Alto grammar school.

Experiments with pictures of animals and with silhouettes are reported which are apt to throw light on the process of eidetic vision: the "building up" and "fading away" of the AB; succession of the different parts; factors determining the sequence of the different parts; localization and duration; degree of completeness and distinctness; relation of subjective factors ("will," "thinking") to objective factors (properties of the stimulus: form, color, etc.); stage intermediate between "visualization" and "imagination"; and the relation of AB to after-images and memory-images.

Some experiments concerning color-mixture in the AB are reported to show that we have to do with phenomena having a certain kind of perceptual givenness and a certain objectivity.

In the experiments concerning different problems of perceptual psychology, measurements of AB could not play the decisive rôle assigned to them by E. R. Jaensch since the cases found apparently have not the "psychonomic" character of the Marburg cases. Emphasis is laid upon the phenomenology of AB. Thus it becomes evident that some of Jaensch's methodological presuppositions are untenable. The lability of certain phenomena often reminds of Urbantschitsch's cases.

A Rotation Table for Laboratory Animals. FRANKLIN S. FEARING, Stanford University.

In connection with a study of vestibular and semi-circular function in pigeons, it was desirable to construct a rotation table in which the rate of acceleration and retardation of rotation would be constant. Such a table for the purposes of this study should be mechanically controlled as to starting and stopping, and if possible be free from electrical operation.

The apparatus designed is approximately five feet in height and the circular top is approximately two feet in diameter. A system of counter weights mechanically initiates and maintains the rotation. The rotation is begun by means of a weight which is attached to the

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under surface of the table. This weight pulls the top through half a revolution and then is released. The table continues rotation at an approximate constant speed for ten revolutions. During the last half of the tenth revolution, a brake attached by a cord to the axis of the table is pulled into contact with the periphery of the table and thus stops the rotation. By this arrangement the acceleration and retardation of the table are fairly constant and the rate of rotation is maintained with little variation by means of a counter weight. The acceleration and retardation consume approximately half a turn each, thus leaving nine complete revolutions at a constant rate. The apparatus is so arranged that clock-wise and counter clock-wise rotation may be alternated, *i.e.*, it is possible to give ten revolutions in one direction followed by ten in the opposite direction. The table is timed to give ten revolutions in twenty seconds. The post-rotational phenomena in rabbits, cats, rats, and pigeons may be studied by means of this table.

Review of Alcohol Studies. W. R. MILES, Stanford University.

Five trained typists were studied with ethyl alcohol doses of 21 to 42 grams taken in 14 to 22 per cent solutions. Errors in typing all grades of copy were increased about 40 per cent in the first two hours after taking the smaller dose and 70 per cent in the similar period following the larger ingestion. Many of the errors were groups of awkward misstrokes which greatly increased the illegibility of the product. Speed of writing was decreased 3 per cent. Other motor coördinations were slowed to the extent of 4 to 9 per cent. The pulse during rest, work of typing, and rest just after typing periods, was faster by 5 to 7 per cent after the smaller dose and 8 to 9 per cent after the larger one as compared with results from nonalcoholic doses. The alcohol effect found in a duplicate or second series on one of the typists was in the same direction and larger than that shown in the first series.

In a group of six experiments on a medical student the subject was tested for ninety minutes in the evening and during a similar period the next morning. He slept throughout the night in a respiration chamber and the alcohol was introduced through a rectal catheter during the first hour or so of sleep. In comparison experiments saline solutions of the same volume were introduced. Numerous sets of electrocardiograms taken while the subject slept confirm the direction and extent of the effect on the heart rate as mentioned above. On mornings following alcohol (37.5 grams in 7.5 per cent solution, and here the subject could not know what had been given him) the

various neuromuscular measurements reflected a depressant action of 2 to 6 per cent.

On one subject several series were completed in which 27.5 grams of alcohol were diluted with water, beer, grape juice, and cider, respectively, to 2.75 per cent strength. The results were in the same direction and with successive series the effect did not decrease. When this dosage in grape juice was tried with a group of nine men, mostly medical students, it was definitely found that pulse rate was faster, skin temperature higher, reflex irritability decreased, muscular movements were slower, and various coördinations were considerably less accurate. Those tasks which made a continuous demand on the subject, such as standing quietly, or the pursuitmeter test, exhibited a stronger effect than did such a discontinuous test as reaction time. In connection with these different measures of performance before and after alcohol (and nonalcohol) doses the amount of alcohol appearing in the blood and urine taken at frequent intervals was determined. The depressant symptoms increased rapidly at the same time that the alcohol content in the body fluids was increasing, and the two maxima were about synchronous, at sixty-five to ninety minutes after drinking. Some of the toxic evidences soon disappeared after the maximal concentration in the blood had been passed. Of the men who took the 27.5 grams in 2.75 per cent solution the one who showed the most prominent effects gave also the highest values for alcohol in his blood and urine. The ranking was fairly parallel down to the man who demonstrated the least effect and had the lowest concentrations. The complete report has appeared as *Carnegie Institution of Washington, Publication No. 333*, 1924.

Nervous and Mental Characteristics of Mongolian Imbeciles. KATE BROUSSEAU, Mills College, Oakland.

Based upon personal observations as well as upon case reports published in medical literature. More than one thousand cases have been studied.

Mentally we find that Mongol children show but few defects and perversions that distinguish them from other aments. In most cases there are no serious defects of the peripheral sense organs or of the sensory nerves. Sensibility to pain appears, in most cases, to be fairly normal. Sensibility to touch is somewhat diminished, due for the most part to a lack of attention. Mongols of the high imbecile class recognize the shape of familiar objects examined by the hand, showing that they are able to interpret impressions received from

cutaneous and kinesthetic senses. The sense of smell seems to be somewhat impaired, owing in part to a defective condition of the mucous membrane. The fissured tongue of the Mongol does not appear to cause any anomaly in the sense of taste. In all Mongols sex sensations are evidently very much diminished. Mongols do not show sex desires and there is no record of a Mongol becoming a parent.

Eye defects are often associated with Mongolism. In some cases the writer found disturbances in visual sensations due to imperfection in the visual sense organs. A few Mongols are congenitally blind but more often the apparent blindness is due to inattention rather than to a defect in the sense organ. Nearly all Mongols show an unusual fondness for music and rhythmical sounds, thus indicating that there is seldom any defect in hearing.

Motor Activity: Spontaneous movements appear much later in the Mongol than in the normal child. The Mongol infant is usually inert, listless, and there is a marked degree of muscular and tendon hypotonia. Holding the head erect, sitting, creeping, and walking are very much delayed in their development. The Mongol shows abnormal laxity of the joints, permitting a range of movement impossible in the normal child. The power of articulate speech is very much delayed and in many cases is never acquired.

Emotionally Mongols show no characteristic disturbances. They are usually good-natured, cheerful, and very affectionate.

The writer has gathered data concerning the mental ages and I.Q. of 206 Mongols. Grouping these children according to their I.Q., it was found that only two of these Mongols were morons, while 126 belonged to the imbecile group and 78 were classed as idiots. Deficient attention is a noticeable characteristic of the Mongol child. It is interesting to note, however, that certain stimuli attract and hold the attention; these are musical sounds. Mongols are markedly deficient in memory processes. A noticeable peculiarity of Mongol children is the tendency to imitate the actions of those about them.

This paper is a part of a monograph, about to be published, on the Physical and Mental Characteristics of Mongolian Imbeciles.

Freudian Theory and Sexual Enlightenment—A Study of Resistances. CAVENDISH MOXON, Los Altos, California.

There is evidence of unconscious resistances in the class of persons who accept some Freudian theories and yet show a disinclination

to approve the sexual enlightenment of the young and ignorant by psychoanalytic education or therapy.

In view of recent psychoanalytical research (especially that of Otto Rank on the Trauma of Birth) all men are alike in their tendency to repeat as far as possible the psychophysical state before birth. Men differ in their ability to transfer to new, real, and external objects some of their interest and love. Even the scientist may find it hard to divert his attention from the painful experience of separation and solitude consequent on birth. In the involutionary stage of life, the attempts to maintain the " reality principle " as the dominant motive may fail to restrain the regressive tendency and the pleasure in fantasy.

Education has been largely in the hands of elders and other persons who have renounced adult forms of sexual activity. In these persons can be studied some unconscious resistances to the sexual enlightenment of the ignorant. The elder is inclined to wish to delay the development of adult sexual behavior,

(a) By the mechanism of unconscious identification with idealized children who can be imagined to live in the Paradise which the elder has lost;

(b) By the mechanism of unconscious envy and jealousy of the young who may be regarded as potential sex rivals;

(c) And by the mechanism of projection on the young of the fears and hates felt in childhood of the elder for his own parents.

The myth of the Garden of Eden in the Book of Genesis symbolizes the enjoyment of the intrauterine situation and the traumatic consequences of its loss, which was the condition of adult activity.

Psychoanalytic experience shows that the need for sex knowledge is limited only by the capacity for understanding, which is indicated by the form of the questions put, if fear is absent; and that the repression of sexual curiosity has serious inhibitory effects on intellectual activity and educational capacity.

Intelligence Tests of the Los Angeles Police Force. GRACE M. FERNALD and ELLEN B. SULLIVAN, University of California, Southern Branch, Los Angeles.

This work was done at the request of August Vollmer, chief of police, and with the coöperation and assistance of his staff. Our preliminary report is based on the tests of 1,712 members of the Los Angeles police department, including all branches of police service.

Two forms of the Army Alpha test were given to each man. The Terman Group test and the National Intelligence test were then given to each man who made a score of less than 50 points on the Army Alpha tests. (It is further planned to give an individual Binet test to each member of the last mentioned group.)

1. The mean score for the total group on the first Alpha is 84 and on the second Alpha 102. The correlation (Pearson product-moment) of scores on the first and second Alpha is +.96. The mean difference is 17.8 points.

2. A comparison of groups shows the mean for patrolmen to be six points higher than that for sergeants. The range for patrolmen is 3 to 201, while that for sergeants is 11 to 158. The range for captains is 22 to 168. These results would seem to indicate that some factor is tending to eliminate the patrolmen of better mentality and that the conditions of promotion are not such as to eliminate those of a very low degree of intelligence.

3. The police group is only slightly higher than the unselected group of army privates. Compared with 1,760 entering students at the Southern Branch of the University of California, the following facts are of interest: 41 per cent of the total police force get below B, which is lower than all but 9 per cent of the university group. Of 1,760 students tested only three graded below 60, and each of these three was dropped before the first mid-term examination. Two hundred fifty of the 1,712 police, including all classes of officers, graded below 60. Of 272 ranking officers, including captains, detective lieutenants, and sergeants, 7 per cent received a grade of C— or less. The ten highest scores include 6 patrolmen, 1 statistician, 1 chauffeur, 1 stenographer, 1 motorcycle officer.

4. Seventy-six of those grading below 50 on the second Alpha test were given the National Intelligence test and the Terman Group test. Not one of these made any considerable improvement of score on these tests. On the National Intelligence test not one of this group scored above 121, which is below the thirteen-year norm; only eight scored as high as the twelve-year level; eight scored below the eight-year level.

5. Mr. Vollmer reports: (1) A considerable selection of men of high scores for positions of responsibility has been justified by their superior performance; (2) the plan for selecting new members of the Los Angeles police force has been made to include a mental test.

Applied Psychology in the Los Angeles Public Schools. A. H. SUTHERLAND, Los Angeles.

The psychologist in the public schools faces many problems in the reactions of normal children quite apart from those which have to do with supernormal and subnormal. And in respect to these normal children the first thought must be, What can be done to provide each child with his opportunity? But administrative rules and practices do not now contemplate that the child may be normal, yet be suffering sadly for lack of an opportunity to work at the kinds of problems in which he is weak and to further strengthen the abilities in which he is strong.

The department at Los Angeles has grown, perhaps beyond other departments in size and service, because of a recognition of the fact that splendid buildings and equipment, excellent teachers and supervisors are not the last word in education. The administrative problem of adaptation to the needs of the children is yet to be faced. As a means to this end, twenty-three specially trained teachers in the elementary school were constituted as counselors, going about from school to school to determine the educational preparation and advancement of pupils by means of standardized tests. In the high schools five teachers were similarly relieved from classroom duties for the purpose of giving tests. The central office has become a staff of one director, two supervisors, five assistant supervisors, seven teacher assistants, six clerks, and one statistician. Of this staff for psychological service two persons are detailed to the problem of the subnormal.

For the normal or dull normal child who falls low on the tests and is considered misfit, a specially organized set of lessons has been prepared, intended to give to both teacher and pupil samples of subject matter, approached from an angle, and requiring the exercise of certain methods of attack and the consequent mental organization. The use of this series of lessons has been so satisfactory that over 10,000 children per year are taught by teachers who have had the necessary training. The pupils are returned to grades, in general, victorious over their difficulties. A careful statement of the relative rapidity of progress may be made in terms of the average. The average pupil selected for this training work is carefully examined, placed, and taught how to work. He then proceeds individually as rapidly as he can. The length of his stay in the work averages twelve weeks, during which time he makes more than one year's progress, or at the rate of 3.36 to 1 (the standard being one grade per year). This

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being an average figure, it is to be noted that approximately half the children made progress in the development of their abilities at a rate faster than three times the normal rate of development.

For the easier comprehension of those laymen who are accustomed to think in terms of dollars, this rate of development has been expressed in terms of the average per capita cost of the elementary pupil, which is $96.16, or $2.40 per week for forty weeks. The cost of progress per week for the average child, then, is $2.40 and for 3.36 weeks is $8.06. But the pupil under this special plan of work secures the same progress during one week for $2.40. The saving, therefore, is the difference, or $5.66 per pupil per week. The saving of time and energy of the entire number of pupils, 4,023 over an average of 12.69 weeks, amounts to the respectable sum of $288,931.86, figured on the basis of grade progress.

Since this amount of progress can be shown with misfit children, it is clear that sooner or later the child will have the attention which he requires. The psychologists can be of much service in showing these needs in greater and greater detail.

The Effects of Cerebral Destruction on the Sexual Behavior of Male Rabbits. CALVIN P. STONE, Stanford University.

A majority of recent reports on sexual phenomena are primarily concerned with the endocrine functions of the gonads; temporarily, the consideration of other factors underlying sexual behavior has been neglected. The present study has for its specific purpose the task of determining what portions and what amounts of the cerebral cortex may be destroyed in male rabbits without causing impotency and sterility. Incidentally it sheds some light on the rôle played by the cerebral cortex in the awakening and maintenance of a fundamental congenital response.

With animals under deep anesthesia dorsal and dorsolateral portions of the cortex were destroyed by cautery. Tests for potency and ability to impregnate females were made both prior and subsequent thereto. On the basis of experimental data now at hand it may be said that in the dorsal or dorsolateral regions of the cerebral cortex no circumscribed area was found necessary for retention of the reproductive functions. Furthermore, the data would seem to justify the forecast that through successive operations on one animal all of the dorsal and the dorsolateral convexity of the cortex may be destroyed without incurring the loss of copulatory ability or the ability to beget young.

Psychological Research in State Institutions. FRED C. NELLES, Whittier State School, Whittier, Calif.

Psychological research has distinct values to the state in the prevention of delinquency and to the administrator of a state institution who is trying to deal with delinquent individuals. Speaking particularly of Whittier State School, psychological research furnished much valuable data on which to base plans for the successful establishment of a new policy introduced twelve years ago, to replace archaic and outworn methods and ideas. Inducement, expression, confidence, trust and respect, being substituted for compulsion, repression, distrust, and fear. The old congregate system, giving way to recognition of individual differences and home life in cottages. An attitude of rather sullen resentment on the part of the boy has disappeared. The percentage of success recorded after the boys leave Whittier has been steadily increasing.

In 1912, the beginning of this administration at Whittier State School, there were both boys and girls with an age range of from eight to over twenty-one years, and even married men and women. The level of intelligence varied from an I.Q. of .56 to 1.27, with histories from sheer dependency to and including murder. On psychological grounds the limitation of the school to fairly uniform types was accomplished along the following lines: (1) Sex: the establishment of a girls' department ninety miles removed. (2) Age: the law was amended so that only boys under sixteen years of age would be committed although the school retains jurisdiction over them until twenty-one years of age. (3) Mentality: whereas formerly 30 per cent of the school's population was found to be feebleminded, to-day a survey shows that but 5 per cent are feebleminded and over 75 per cent below normal or above. A provision was thus made for the transfer of feebleminded to institutions conducted for their care. (4) Admission: the law was amended so as to provide for acceptance of boys at Whittier on probation from the courts without commitment; and (5) Complete Examination: the psychological was supplemented by examinations of a psychiatric and neurological nature following a routine of the medical examination.

Psychological research begun at Whittier has extended to other state institutions, private institutions, and public schools. It has offered a basis of recommendation to parents and guardians of problem children. It has resulted in the founding and publication for seven years of the *Journal of Delinquency*. Special scales have been devised for measuring home and neighborhood conditions. Whittier

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has become the western representative of the Eugenic Record Office of New York, supplying duplicate copies of all family histories.

The psychological work at Whittier has received the general support of the psychological profession in California. Whittier is particularly indebted to Grace M. Fernald, Lewis M. Terman, and J. Harold Williams. The latter was for some years the director of the Department of Research and editor of the *Journal of Delinquency*. The administrator who fosters psychological research has to stand alone and is subject to political attack. Even the fruitful scientific study of these problems in human behavior at Whittier State School has no guarantee of permanency, although there is hardly a greater problem than delinquency facing the people of this or any other state in the Union.

Educational Achievement of Children with Personality and Behavior Difficulties. PHYLLIS BLANCHARD, RALPH P. TRUITT, and RICHARD H. PAYNTER, JR., Child Guidance Clinic, Los Angeles.

This study is a preliminary report of a group of children from the second to ninth grades, inclusive, who have been studied by Child Guidance Clinic No. 1, conducted in Los Angeles by the National Committee for Mental Hygiene as a part of the Commonwealth Program for the Prevention of Delinquency. Only ninety-one of our cases to date fall within this group, the others being pre-school, kindergartners, or first graders, and hence below the range of educational tests, or else high school students above the test range. The I.Q. distribution of the group is from 82 to 153 by the Stanford-Binet, and the average I.Q. is 110.5. The average E.Q. is 106.2 and the average A.R. is 94.7. The fact that the children included in this study are of good intelligence affords a better opportunity to observe the effect of their personality and behavior traits upon their educational achievement, since there is no factor of mental deficiency to be evaluated and discounted.

The children have come to the clinic from various sources. Some have been sent from the Juvenile Court for serious offenses; many have been singled out by the teachers because of their failure to adjust to the discipline of the classroom or other behavior difficulties; many more are brought by anxious parents who have learned of the clinic through the newspapers or speeches at parents-teachers association meetings. All are given the same type of study, which includes the taking of a complete social history and thorough medical, psychological, educational, and psychiatric examinations. The purpose of

the clinical study and treatment is to recognize and correct personality and behavior deviations, and to prevent their development into mental disease or delinquency. After the examinations are completed, a staff conference is called on the case, at which the findings from the several examinations are reported and a plan of treatment mapped out. This treatment is thereafter carried on by the psychiatrist, psychologist, medical men, and social worker coöperatively.

Since this is only a preliminary report upon a small number of children, our findings are tentative. Undesirable personality traits and behavior difficulties are fairly evenly distributed through the different levels of intelligence and educational achievement. Only about one-eleventh of the children were free from physical conditions sufficiently serious to require medical or surgical treatment. Poor heredity was prominent in slightly more than one-third of the cases, and was fairly evenly distributed through the different levels of intelligence and educational achievement. Bad environmental influences, which appeared to have a direct bearing on the personality and behavior difficulties of the child, were found in *every* case.

Up to the present time our clinical studies indicate that severe personality and behavior difficulties may be found in children of high intelligence and educational achievement. The causation therefore must be sought in other than intellectual factors. When we have control groups through a study of a representative cross-section of unselected children, we shall know more as to the part that physical defects, poor heredity, and pathological social situations actually play in the development of undesirable personality traits and behavior patterns. This further knowledge may be only a point of departure for our search as to etiology, and we may need more refined methods of studying emotional responses, temperamental traits, and other nonintellectual processes before our problem is solved.

The Analytical vs. The General Diagnosis in Clinical Psychology. LIGHTNER WITMER, University of Pennsylvania, Philadelphia.

A New Type of Functionalism. W. B. PILLSBURY, University of Michigan, Ann Arbor.

This is a suggestion made in a belief that a definition or statement of the purpose of psychology should formulate as closely as possible the actual ends and attainments of the greater number of workers in the science rather than attempt a logically rigid *à priori* statement. Some of the present formulas seem rather to serve as a basis for

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"holier than thou" cliques, with formulas that, like the creeds of certain religious sects, are sufficiently improbable to make a virtue of belief under difficulties. The greater the improbability, the greater the merit in belief.

I believe that all really admit the existence of mental functions that the man as a whole exhibits, whether there is agreement upon the way the function attains its end or not. There is no doubt that an individual is pleased whether he is conscious or not, or whether "affection" is or is not a mental structure. Similarly a man undoubtedly "means" a certain thing at a given time, it matters not whether that meaning is imaged or imageless, or whether the imagery, if it exists, is sensory or a motor twitch.

If we accept the function, as such, as the subject matter of psychology, we can first state the conditions under which the function is exercised—can study the limits of its efficiency—and then go as far as we can in a study of its mechanism. With the latter problem all of the controversies of the present different points of view will of course make their appearance, but we shall have a statement of what can be accepted before the points of divergence are emphasized. We can at least start before breaking up into hostile camps. As it is, a single fact may wreck all or most of the present formulations. If thought is imageless, the universal structuralism must be abandoned; if anywhere in the world an individual is conscious, behaviorism is gone. Animism is too far away from facts to be easily disturbed, but even it may some day hit a factual snag.

As opposed to the older functionalism of Dewey and Angell, I would omit all reference to anything that functions. The statement that the physiological processes take care of the individual until they no longer suffice and then mind begins to function to remove the obstacle, seems to me a needless separation between the provinces of physiology and psychology. We can study the function as a fact or accomplishment and leave all theory as to ultimates until facts are exhausted, and even then state the theory as a hypothesis or probable formulation of observed facts rather than as a major premise.

Heredity, Environment and Mental Achievement. TRUMAN L. KELLEY, Stanford University.

A REVIEW OF RACIAL PSYCHOLOGY

BY THOMAS R. GARTH

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The last review of racial psychology which appeared in the BULLETIN was made by Professor R. S. Woodworth in 1916, under the title, "The Comparative Psychology of Races." [1]

Eight years have elapsed since this excellent summary was published. The trends of racial psychology noted by the reviewer at that time have become more and more evident, although new trends have rapidly developed. The experimental and statistical attack of the problem of racial differences is the method by which racial psychology has gone rapidly forward; and this, indeed, is to be regarded as gratifying to the experimentalist. On the other hand, theoretical studies, and popular presentations of the problem, have valiantly assisted in the development, the former appearing in various books and professional magazines, the latter in the popular monthlies, and even in the science service sections of the newspapers. A survey of the literature of the latter type, which, as has been indicated, is more or less theoretical—that is to say, this literature is not always based on experimentation—brings to light just this tendency of relying more and more on the results of "mental anthropology." It seems appropriate, therefore, to examine this theoretical type of study first, and review the experimental studies later, because these theoretical studies as well as the experimentations all come within the span of the last eight years, from 1916 to 1924, to date.

In going over this indicated division of the literature, there is to be noted, then, a tendency for the sociological, anthropological, and psychological writers on the subject to begin to take into consideration the findings of the experimenters working with mental tests, when they are considering mental differences in races. But we shall now note the attitude of these writers toward the question of equality or inequality of races. In fact, as these studies are examined the thing most predominant is a characteristic state of mind, not a new one on the part of professional and lay thinkers, and that is a belief in racial

[1] WOODWORTH, R. S. The Comparative Psychology of Races. PSYCHOL. BULL., 1916, 13, 388–397.

differences in mental traits. The positive belief is pretty thoroughly held by almost all of these theoretical writers. According to them it is a serious mistake to think of all human minds as the same.

Levy-Bruhl (**56**, p. 7) insists that such a doctrine or belief in the identity of an "esprit humain"—"dans tous les temps et dans tous les lieux," which has amounted to a postulate or axiom with some investigators, as the school of Tylor and Frazer, is wrong and has been followed by serious consequences in the thinking of this school of savants. He goes on to say (**56**, p. 454) that the postulate is incompatible with the facts revealed by the comparative studies of diverse human societies. He further says that the mentality of inferior peoples is of a character essentially "prelogique et mystique," which is oriented otherwise than ours, and whose social concepts are controlled by the law of participation. Consequently (**57**, pp. 517–518), he warns against a strong tendency on our part to attribute to primitive peoples mental operations similar to our own. They may have survived in the struggle for existence by various means, it is true, and may have invented tools and obtained "dans la production d'un certain objet, des résultats d'une délicatesse et d'une exactitude suprenantes," and from such facts we are disposed to think of their resemblance to us in point of mental operation. But, according to him, very close observation and analysis alone reveal the differences. As one reads Levy-Bruhl one is not satisfied as to whether he has disposed of qualitative similarities absolutely. One remembers that Woodworth said in 1910 if there are differences in mental traits among races they must be differences in degree and not in quality, for memory will always be memory, perception always perception, in all races.[2]

Madison Grant, in "*Passing of The Great Race*," holds a like view of the inequality of mind (**39**, p. 226). Of the Alpine, the Mediterranean, and the Nordic races, he says that they vary intellectually and morally just as they do physically; that moral, intellectual, and spiritual traits are as persistent as the other characters, the physical, and moreover that they are transmitted unchanged from generation to generation.

Again Lothrop Stoddard's purpose in "*The Rising Tide of Color*" (**92**) is to encourage the "comity" of white peoples, which he calls the "psychological basis of white civilization" (p. 198).

[2] The writer wishes to make acknowledgment of the assistance of his wife, Ethel Tucker Garth, in reviewing the work of the theoretical writers mentioned in this article.

Science, he claims, has served to " fortify white race consciousness with its sanctions." White leadership has brought civilization to the present advanced state, as for instance during the nineteenth century man entered a new material world which was an improvement in degree and kind above all that had been previously accomplished, and it was the " white man's brain " which had conceived all this. Unfortunately the reader is not shown why the superior white man labored under the primitive shadow of folkways, waiting until one hundred years ago to begin his dizzy intellectual climb. The reviewer believes that a careful study of the vicissitudes of education of the white race is apt to make one feel humiliation rather than pride in his kind. Moreover, Stoddard says (p. 165) that each race type, set up by " milleniums " of isolation and inbreeding, is a stubbornly persistent energy; each type possessed a special set of characters, not merely physical characters visible to the naked eye, but moral, spiritual, and intellectual characters as well. It is a little difficult for the scientifically trained psychologist of the " hard-headed variety " to sit silently by and hear such statements made so confidently. They may appeal to the basis of the " comity," namely, the white race present in him, but at the same time, since his scientific mind is neither white, nor black, nor even red, it cannot act on this basis, for it must have proof. It is a bit disconcerting to read further and find toward the end of the writer's argument the statement that white men (p. 229) must get the idea of Asiatic inferiority out of their heads, for the brown and yellow peoples are gifted, and have profoundly influenced human progress. But for this last statement we might have little difficulty in placing the writer as standing for or against the equality of at least these races.

Most of the writers treating the subject of race theoretically have not been psychologists in the strict sense of the word. It is now time to quote one such, and this is Professor Wm. McDougall, who comes directly to the point and places himself on record as thinking (64, p. 154) that there can be little doubt for believing in " great differences " in mental traits of races, and that these are probably persistent for thousands of generations. Yet he regards differences of temperament as perhaps the clearest (p. 7) and most generally recognized. In connection with the results of mental tests, we shall speak of McDougall later on.

One of the most vivid of these writers is Seth K. Humphreys (44), who has much to say of inherent values within a single race, and speaks thus of comparative racial values (p. 25): " Inequality of

races, of individuals within a race, within a community, within a family—that is the idea fundamental to the study of mankind." Again (p. 99), " mankind is divided into races primarily according to physical unlikeness; but dissimilarities of mental attributes and capacities are so clearly associated with outward physical differences that they enter an important factor in distinguishing races one from another." To be sure, the slow plodding experimental psychologist cannot follow this writer, who, like many of the other writers quoted, is continually running the risk of making hasty statements. The former would be more careful, and would prefer to make haste more slowly and cautiously, as compared with the theoretical writers. The writer goes on to remark that, " whether or not the mental attributes which have set up the white as the dominant race of the world were also once lodged with the yellow, the black, and other inferior races, and probably became lost through outbreeding during the milleniums of separation from the parent stock is a question as unanswerable as it is important. The outstanding fact is that they are not possessed of these attributes to-day. The search for racial ability to maintain the world's civilization need not go a step beyond the unmixed white " (p. 108). Again: " The active substance of civilization is involved with the destinies of a mere handful."

In direct opposition to the utterances of the foregoing anthropologists, sociologists, and psychologists, we have from *" Race and Nationality,"* by Oakesmith, avowedly a disciple of M. Jean Finot—who, to quote Oakesmith (72, p. 29), has laid the ghost of racial pride beyond resuscitation—the statement (*ibid*) that whenever the attempt is made to talk about the abstract " race " as if it existed in the actual world, we are faced by contradiction and halted by absurdities. He wants to know if there is a single intellectual or moral quality which can be safely regarded as the gift of a special race to its people. If so, all the members of the race should possess it equally. In the opinion of this writer a pure race is an abstraction, and in this case a racial characteristic would be something from which no member of a race could escape. Nationality is accounted for by environment, and he insists that to investigate race as an operating objective factor in the evolution of societies is both unscientific and unphilosophical.

The writer to be considered next is Carr-Saunders, who states, in *" The Population Problem "* (14, p. 397), that he sees no marked differences between the negro and the modern European. The differences are rather, he thinks, in disposition and temperament. The white man has initiative, inventiveness, versatility, and power of lead-

ership; the black man has humility, patience, loyalty, and self-sacrifice. Although these are signs of differences between these races, yet these differences are not remarkable, and further, the degree to which so apparently low a race as the Australian differs from the European is not in many cases much greater than the degree in which the negro differs from the European. Among the writers so far considered none have mentioned in their studies the experimental attack of the problem of racial differences in mental traits made by Woodworth and Bruner in 1904, nor any of the other experimental studies whatsoever. But Carr-Saunders seems to see some advantage in the experimental attack and gingerly takes into consideration the work of Miss Strong with the Binet Intelligence test on negroes, and the studies of Ferguson.

This must be quickly followed by a mention of McDougall's *"Is America Safe for Democracy?"* (**64**), which, along with contemporaneous studies, indicates a tendency to make much better use of the results of experimental investigations. In fact, in the foreword (p. vii) McDougall says very pertinently that most of the books have been written from the purely biological standpoint. He seeks, therefore, to bring together the findings of "mental anthropology, which are now beginning to be garnered on a large scale." But mental testing and its results do not incline this writer to shift from his original position of belief in innate racial differences in mentality.

Having thus made inquiry into the theoretical treatment of race psychology and indicated a transition toward a greater reliance on experimental studies on which to base conclusions, we now are ready to embark upon a review, for the span of time allotted to us, of the experimental attack upon the problem of race psychology.

Our first approach to the literature of the subject as found in the experimental studies had probably better be to find out how the problem is conceived by some of the investigators.

Because of the interest of the anthropologist, we record the following: "Don't set out measuring anything at all," says Karl Pearson before a group of anthropologists (**74**, p. 373), "until you have settled the problem you wish to answer." Again (p. 371): "In the present condition of affairs it is only too true that much of this work being psychometric will fall into the hands of the psychologist." "It is as much the duty of the anthropologist to measure the human mind as it is his duty to measure the functional actions of the human body—its dynamical characters. By dynamical characters I under-

stand such qualities as resistance to fatigue, facility in physical and in mental tests" (p. 372).

Hunter (46, p. 115) conceives the problem in this fashion: "It is undetermined as to what extent racial membership determines behavior through inherited nervous mechanisms. The essential problem is whether or not there are inherent differences in ability." "To what extent do the conscious experiences of the race differ, and why do they do so? What are the relative abilities of the different races when examined by the method of mental tests?" (p. 318)

Arlitt (4, p. 179) says that race norms that do not take the social status factor into account are apt to be to that extent unreliable.

Young proposes (108, p. 31) "to investigate by psychological tests and other measures the mental capacity of the children studied in certain schools and to discover whether their ability to master the traditional American education is due to (a) their alleged language handicap, or (b) the lack of native mental endowment which prevents their acquisition of the content of the curricula."

Peterson (76, p. 28) takes this stand: "Since even general intelligence tests are apt to measure opportunities to an unknown extent, as well as innate abilities, it is safe to apply them to the different races, for interracial comparison only with caution."

Brigham (11, p. 192–3) thinks that owing to the present stage of development of psychological tests, we cannot measure the actual amount of difference in the intelligence due to race or nativity. We can only prove what differences do exist, and we can interpret these differences in terms that have both social and economic significance. When our methods of measuring intellectual capacities have been perfected, we will be in a position to determine quantitatively the amount of difference."

Garth (26, p. 16) indicates that "the elements in the study of racial mental similarities or differences must be these: (1) Two so-called races, R_1 and R_2; (2) an equal amount of education and opportunity, E, which should include social pressure and racial patterns of thought; and (3) psychological tests, D, within the grasp of both racial groups. We should have as a result of such an experiment R_1ED equal to, greater than, or less than R_2ED."

Pintner (59, p. 349), in going over the data pertinent to our topic, asks us to keep two difficulties in mind: getting a fair sampling of any racial group in this country, and the inadequacy of language tests for foreign language speaking groups. "The difficulty of comparing different racial groups is largely one of setting adequate tests which

are equally fair to the groups to be compared. Nonverbal tests seem to the author to offer the only possibility" (p. 357).

Symonds (96, p. 442) advises that "we had better cast away our old blanket conception of racial superiority and consider superiority rather in terms of separate functions or groups of functions."

Thorndike (88, p. 570) says: "In many practical matters the upper limit of a group is as important as its average or typical status."

From the foregoing excerpts taken from a few of the many workers in the field of race psychology and from a survey of the literature in general, we may say in connection with the topic of the problem that in the minds of experimenters and students the problem is conceived in about the same way as it was in the period of activity previous to the one we are now examining. The only difference is in the matter of detail. If we may undertake to make a generalization it is this: The problem of race psychology to-day is conceived as an effort to (1) measure racial mental characters and behavior, which are (2) determined through racially inherited nervous mechanisms, (3) involving cautiousness in taking into account social status, and all facts of nurture and education, until we are (4) able to perfect tests that will measure innate abilities in spite of the presence of nurture; (5) to take care to secure really random samplings of the races studied, (6) to consider that possibly a "blanket" conception of racial superiorities are in error, and finally that (7) often the upper limit of a group is as important as an average performance.

Some of the writers, especially the earlier ones, do not emphasize the problem, it is true, and some do not seem to conceive it clearly; but the tendency now is to do this, and to make more careful consideration of the details of the same.

In order to present the facts of the experimental findings before the eye of the reader, we have had recourse to three tables, as I, II, and III. These will show certain interesting facts that would hardly be appreciated in any other than tabular form.

Upon looking at Table I, which is to be taken in connection with the bibliography at the end of this review, it will be seen that there have been made forty-five reports in which some phase of the subject of mental traits as different in races has been considered. These have been made by about thirty-five investigators either singly or in collaboration. As experimental basis for these reports, seventy-three (counting no group twice and not counting American whites) different racial groups have been the subjects of study.

Table II shows that the subject most studied is the American

negro, for there are reported twenty-five different experiments with various tests given him at various times. The next most studied group is one of the miscellaneous subraces, which might be, and often is called the " immigrant group." However, we should stipulate that the subjects were sometimes native born of foreign parentage. These have been the subject of twenty-three different experiments when they were either studied alone or together with others, their racial identity always being accounted for in the composition of the group. After these, there are eight studies of the American Indian, and six of the Chinese either in America, in Hawaii, or on their native soil. There are reports of four studies of Mexicans. The same table brings to light some interesting facts as to the trend in the activity of the investigators. In 1917 there were only two experiments reported, and these were: one on the Zulus in Africa and the other on negroes in America. Two were reported the next year, the subjects being negroes in America, and Chinese and Japanese. In the following year five studies were reported, four of which were on the American negro and one on Hindus. This was in 1919. The number of studies increased for the next three years, reaching an aggregate of nineteen experimental studies in 1922. This year was one of great activity, but in the year 1923 there were thirteen studies, and so far in 1924 sixteen studies have been reported. It will be seen that there has been, and still is, a great and growing interest in the question of race psychology among psychologists. It will be noted also that many races have been studied in the last five years that have never been studied before. Almost all races, in fact, have now been used as subjects of intelligence and psychological tests. While the American negro still is found to be the subject of much experimentation in the last eight years, *i.e.*, in twenty-five instances out of the total seventy-three racial studies, his popularity is being sharply contested by that of the immigrant group subjects, and slightly so by studies of American Indians, Chinese, Japanese, and Mexicans. That is to say, the trend is for the use of mental tests to spread over the whole world. Where investigations have not yet been made in the corners of the earth and isolated countries, we may soon expect to hear of their being carried on.

The next question after consideration of the races studied is naturally what mental processes have been studied and what kind of tests have been used in making these seventy-three racial studies. (See Table III.) The interest in differences in intelligence has always been uppermost, for of the seventy-three studies fifty-five

(over two-thirds) have been made on that phase of mental life called intelligence, if we may decide the question on the avowed purpose of the test. In addition, such conscious processes as memory, imagination, and association have been measured among the different races, as well as such dynamic characters as learning and resistance to fatigue, also will-temperament and esthetics. These last phases of the problem, the dynamics and esthetics, bid fair to contest the field with intelligence but possibly not to displace it.

As to the devices for testing, it is to be noted that the individual test in the form of the Binet-Simon, and the Stanford revision of the Binet, is to a rather decided extent giving way to the Group Intelligence test since the introduction of the Otis test and the widespread use of the Army Group tests. (See again Table III.) In the last eight years, of the racial studies made by intelligence testing eighteen have been with individual tests and thirty-seven with group tests. Also, the Group Psychological test has had a renaissance, especially in the last four years, and is competing sharply with the individual test of any kind in the field of race psychology.

Handling the data with a view to interpreting the results has always been a difficult task, and accordingly it will be to the point to note the trend in this respect. If we examine Table I we will quickly discern that the use of the I.Q. is becoming more and more the rule in expressing results, even the results of Group Intelligence tests. In the case of the group test the I.Q. must of necessity be an approximate I.Q., just a little precarious, perhaps, but it will prove to be such a useful means for such purposes of comparison that statisticians must find some means of making its use more safe. But this is not the only difficulty. We call attention to Peterson's recommendation (77) in speaking of the use of a common unit in the measurement of race differences, which is that of using quantitative units of the distribution of, say, the "white subjects," and thus to facilitate comparison with results of other tests. In this way we are independent of the absolute size of the scores in any particular test.

But what results are being found by these experimenters? What is their belief in consequence of their investigations? These are very pertinent questions. Has there been any change in the minds of psychologists as to the racial differences in mental traits in the last eight years? We shall take up the first of these questions as to the results found in respect to racial differences in mentality. The I.Q. of the negro is found to range from 83 to 103 in Binet tests. It would be hardly fair to take the approximate I.Q.'s given in Table I

for the group tests, since nearly all the subjects of these studies were southern negroes and do not represent a fair sampling. Results of army tests show the northern negro to be decidedly superior to the negro from the South, as has been shown by Yerkes, Trabue, and Brigham.

The army tests reveal (105, p. 21) the fact that the mental age of the colored draft was 10.4 years and that of the white draft 13.1 years, and that the overlapping of scores for colored individuals was between 10— and 12 per cent, according to Pintner (79, p. 341). If we separate the southern colored subjects from the northern colored subjects we find the overlapping on the white distribution for the former to be for Alpha about 6 per cent and for Beta 14 per cent, but for the latter it is respectively 31— or 34 per cent. According to Peterson (76, p. 134), "the intelligence of the negro race as represented in America is about that which will give him an I.Q. of approximately 75 to 80. The disadvantages of the negroes' inferior school and home environment and of his general social status, as these factors affect the test scores, will be at best partly balanced by the fact that there are results on colored subjects (as found in America) with a larger per cent of individuals containing white blood in varying degrees."

According to Yerkes (105, p. 364), the intelligence of the negro should be regarded as inferior to that of the white, and the southern negro is inferior to the northern negro, as judged by the results of army tests.

The inferiority of negro intelligence in comparison with the white is again brought out by results of studies of mulattoes, particularly as made by Ferguson (23, p. 541): "The results of the army intelligence tests showed that the negroes with the greater amount of white blood as indicated by skin color obtained uniformly higher average scores on a group test than those with less white blood."

Pintner (79, p. 345) regards such results as obtained as "sufficiently numerous and consistent to point to a racial difference in intelligence. The overlapping of the two races is great, and the most liberal estimate seems to be that, at most, 25 per cent of the colored equal or exceed the intelligence of the whites."

As respects some differences between whites and the American negro in other traits besides intelligence, we have this: In learning the negro is inferior (76, p. 133); in control of words they are superior, but in word-for-word reproduction they are not (93). In continuous mental work they show more inclination to warm up at

the start, and less disposition to resist fatigue than do whites (**25, 26**). Using the Downey Will-Temperament test, McFadden and Dashiell (**63**) found the negro's personality to be weaker than that of similarly tested groups of whites.

Results on tests for the immigrant groups, according to Brigham (**11**, p. 80), " indicate a general intellectual superiority of the Nordic group over the Alpine and Mediterranean groups." And again, according to Yerkes (**106**, p. 365), " for the past ten years or so the intellectual status of immigrants has been disquietingly low. Perhaps this is because of the dominance of the Mediterranean race as compared with the Nordic and Alpine."

Young (**108**, p. 95), who studied the Latin immigrant groups, as Italians, Portuguese, and Spanish-Mexicans, concludes that if the 100 I.Q. can be taken as the average for the Americans in terms of present grade status, the Latins are five-sixths of this amount and might be represented by an average I.Q. of 83."

In contradiction to these investigators we have this, from Feingold (**21**), who studied a large group of first generation immigrant groups: " The mental differences among American reared descendants of foreign races, viewed among themselves, are so small as to be practically insignificant." However, since the subjects of this study were all high school students, the principle of random sampling does not seem to operate sufficiently here, though the results are extremely interesting and valuable.

Hunter and Sommermier (**45**) and Garth (**28, 29**), in studying mixed blood Indians, obtained results consistent with studies of mulattoes, namely, that their average intelligence as measured is above that of the average full blood. Hunter found a positive correlation of .64 between the score in the Otis test and degree of white blood in his mixed blood subjects, using the following degrees of Indian blood: one-fourth, one-half, three-fourths, and four-fourths along with fifteen-year-old whites to represent no Indian blood. Garth found the performance of his mixed blood Indians, in using various psychological tests, to be on the whole 11 per cent better than that of the full bloods.

In a test for mental fatigue, Garth found (**25, 20, 32, 34**) that full blood Plains (nomadic) Indians excelled whites, mixed blood Indians, negroes, and full blood Plateau (sedentary) Indians in resistance to fatigue in a continuous performance of single columns of addition. In a study of color preference with whites (**33**) and full

TABLE I.

SHOWING EXPERIMENTAL WORK IN RACE PSYCHOLOGY SINCE YEAR 1916.

Date	Investigators	Race	No. Cases	Test	Results	Reference
1917	Loades and Rich	Native Africans—Zulus.	243	Binet (adap)	No definite measure of difference.	59
1917	Sunne	Negroes Whites	126 112	Binet and Yerkes	White overlap 1 year older mentally.	93
1924	Sunne	Negroes Whites	1112 5834	N.I.T.; Myers Mental Measurement.	White 1 to 1½ years older, N.I.T. overlap of Negro 21%, Myers M.M.	94
1919	Ferguson	Mulattoes Negroes White draft	2288 155	Army Alpha, Army Beta Army Alpha nd Beta	Score favors white blood. Mental Age Negro 10.1 years. Mental Age White 13.1 years.	23
1919	Pressey and Teter	Negroes Whites	187 1022	Pressey	Negro 2 years younger.	84
1919	Trabue	Negroes	8244	Army Alpha	White better than Negro Average 1.18 P.E.	100
1920	Derrick	Negroes, college Whites, college	55 75	Binet	Negro I.Q. 103. White I.Q. 112.	19
1920	Murdock	Negroes Whites	225 514	Pressey Group Standard	White better than Negro 85 P.E. units. White overlap 72%.	70
1920	Schwegler and Winn	Negroes Whites	58	Stanford-Binet	Negro I.Q. 89. White I.Q. 103.	89
1921	Yerkes	Negro draft White draft		Army Alpha and Beta	Negro M.A. 10.4 year. White M.A. 13.1 year; Negro overlap 12%.	105
1921	Arlitt	Negroes	243	Stanford-Binet	I.Q. increases with age.	4
1921	Arlitt	Negroes Whites	71 191	Stanford-Binet	I.Q. 83 Negro. I.Q. 106 White.	5
1921	Haggerty (Va. Ed. Asso.)	Negroes Whites	3000 13000	General Intelligence Delta.	Negro overlap on White: Rural-19.9%. City-14.3%.	101

1922	Pintner-Keller	Negroes	71	Binet	Negro I.Q. .88.	78
		Whites	249		White I.Q. .95.	
1918	Lacy	Negroes	.....	Binet	85 (?).	52
		Whites	.....	Binet	95 (?).	
1922	Jordan, A. M.	Negroes	247	N.I.T.; Scale A	I.Q. .75, overlap 20-25%.	48
		Whites	1504			
1923	Brigham, C. C.	Negroes	.....	Army Alpha and Beta	Dif. $-3.13 \pm .0138$ in favor of whites	11
		Whites	.....			
1923	Peterson	Negroes	734	Pressey	Negro I.Q. 75; Negro deficiency 1.35 Quotient units.	76
		Whites	641			
	Peterson	Negroes	115	Otis. Advanced	Negro I.Q. .58.	
		Whites	171			
	Peterson	Negroes	177	Otis. Primary	Negro deficiency 88 Quotient units.	
		Whites	357			
	Peterson	Negroes	37	Haggerty	Negro I.Q. .92?	
		Whites	71			
	Peterson	Negroes	90	Myer	Negro deficiency 1.70 Quotient units.	
		Whites	111			
1923	Thorndike	Negroes	349	I.E.R.	4% Negro reach Median of White.	98
		Whites	2653			
1923	Sunne	Negroes	1112	N.I.T.	M.A. Negro 1-1½ years below White. Average overlap 21% in Myers M.M.	94
		Whites	5834	Myers		
1919	Garth	Negroes	133	Mental Fatigue	Negro fatigue most—Indians least	25
1920		Whites	711			26
		Indians	190			
1919	Mitchell and Rosanoff	Negroes (Chil)	300	Kent-Rosanoff	Negro farther from adults. White Norm that White children.	67
		Whites (Chil)	300			
1921	Peterson	Negroes	315	Learning; Multiple Choice	95-80% of White surpass mind of Negro.	75
		Whites	311			
1923	McFadden and Dashiell	Negroes	77	Downey Will-Temperament.	Whites have stronger personality 15.4%.	63
		Whites	77			
1920	Murdock	Jews	489	Pressey	Jews, Americans Whites, overlap 53%. Italians inferior to Jews 15%.	70
		Italians	491	Pressey.		
		Americans White	485	Pressey.		

TABLE I.—*Continued.*

SHOWING EXPERIMENTAL WORK IN RACE PSYCHOLOGY SINCE YEAR 1916.

Date	Investigators	Race	No. Cases	Test	Results	Reference
1921	Arlitt	Italian	87	Binet	I.Q. .85.	5
		American White	191		I.Q. .92.	
1922	Pintner and Keller	Italian	313	Binet	I.Q. .84.	78
		Slavish	130	Binet	I.Q. .85.	
		Hungarian	90	Binet	I.Q. .89.	
1922	Brown	English	90	Binet	I.Q. 1.02,	12
		German	67	Binet	I.Q. 1.02.	
		Slavish	187	Binet	I.Q. 1.02.	
		Finnish	226	Binet	I.Q. .90.	
1922	Young	Italian	248	Army Alpha	I.Q. .88.	108
		Portuguese	75	Army Alpha	I.Q. .87.	
		Spanish-Mexican	53	Army Alpha	I.Q. .87.	
1923	Brigham	Nordic	3456	Army Alpha	Average Nordic less Average	11
		Alpine	4766	Army Alpha	Alpine 1.61 ± 0.04. Average	
		Mediter	4196	Army Alpha	Nordic less Average Median 1.85±0.4.	
1924	Davenport and Craytor	Immigrant Stocks	102		Germans highest in leadership, pertinacity.	18
1924	Feingold	American	1442	Mod. Army Alpha	Alp. Am., Av. rank of I.Q. 1.	21
		English-Scotch	112		2	
		Jews	862		3	
		Germans	119		2	
		Danish-Swedish	172		4	
		French	47			
		Irish	375		5	
		Polish	1112		6	
		Italian	251		7	
		Colored	92		8	

1921	Hunter and Sommermier.	Mixed and Full-Blood Indians.	715	Otis Int.	Correlation of +.41 between degree of white and Ind. blood.	45
1922	Garth	IndianMixedBlood		N.I.T.	Rank 1.	31
		Indian Full-Blood. of Plains.			Rank 3.	
		Indian Full-Blood of Plateau.			Rank 4.	
		Indian Full-Blood. Navajo.			Rank 5.	
		Mexicans.			Rank 5.	
					Rank 2.	
1919	Garth	Indians.	See above.	Fatigue.		25
1921	Garth	Mixed-Blood Indian.	215	Psy. Tests.	Mixed-Bloods excel Full-Bloods by 11%. Full-Bloods excel	28 29
		Full-Blood Indian.	165	Psy. Tests	Mixed-Bloods in resisting	
1922	Garth	Mixed-Blood Indian	82	Fatigue.	mental fatigue.	32
		Full-Blood Indian.	108	Fatigue.		
1923	Garth	Nomadic Indian.	108	Fatigue.	Nomads excel Sedentary Indians in resisting mental fatigue.	34
		Sedentary	121	Fatigue.		
1922	Garth	Full-Blood Indian.	559	Color Pref.	Indian prefer Red, Blue, Violet, etc.	33
1923	Paschal and Sullivan	Mexican.	410	In. Performance	Lower ½ of distribution favors American.	73
1924	Sheldon	Mexican.	100	Stanford Revision.	I.Q. .89.	90
		Whites.	100	Binet and Cole Vincent	I.Q. 1.05.	
1920	Wolcott	Chinese.	63	St. R. Binet.	2-3 of I.Q.s are 100 and over.	102
1922	Yeung	Chinese.	109	Binet.	I.Q. .97.	107
1923	Murdock	Anglo-Saxon.	60	N.I.T.	Anglo-Saxon excel in intelligence.	71
		Chinese.	60	Seashore Pitch		
		Japanese.	60	Discrimination.	Oriental high in morality test.	
		Portuguese.	60	Morality		
		Anglo-Saxon Hawaiian.	60			
		Chinese-Hawaiian.	33		Musical ability high in Hawaiians	
		Korea	32			
		Porto Rico.	32			
		Filipino	32			

and mixed blood Indians, he found apparent racial differences in this phase of esthetics.

Sheldon (90), who tested 100 Mexicans with the Binet-Stanford and Cole-Vincent tests, on 100 whites found an average I.Q. of 89 for the Mexicans and 105 for the whites. Paschal and Sullivan (73) used six performance tests and made anthropometric examinations on Mexican and American children in the public schools of Arizona. "The overlapping in the upper half of the distribution was larger from the median downward." The American children were superior. Other tests on Mexicans show them to be inferior to the whites.

On the study of the intelligence of the Chinese we have the reports of Walcott (102) in China, who used an adaption of the

TABLE II.

SHOWING PEOPLES STUDIED SINCE 1916.

	1917	1918	1919	1920	1921	1922	1923	1924	Tot.
Zulus	1								1
Negro (American)	1	1	4	3	4	3	7	2	25
Indians (American)			1		2	3	1	1	8
Mexicans						2	1	1	4
Chinese		1		1	1	1		2	6
Japanese						1	1	1	3
Hawaiian									
Hindu					2				2
Jews				1				1	2
Italians				1	1	2		1	5
Slavs						1		1	2
Hungarians						1		1	1
English-Scotch						1		1	2
Germans						1		1	2
Swedish						1		1	2
Finnish						1			1
Portuguese						1	2	1	4
French							1		1
Irish								1	1
Total	2	2	5	6	10	19	13	16	73

Binet; Young (107) in San Francisco and vicinity; Porteus (83), who studied them in conjunction with Japanese and Portuguese, using the Binet; Pyle and Creighton (85), using psychological tests; Murdock (71) in Hawaii, using National Intelligence tests on Anglo-Saxons, Chinese, Japanese, and other racial groups; and a very recent report by Symonds, who tested 513 Chinese in Hawaii. In all these tests, though Anglo-Saxons generally excel the Chinese, still the

latter obtain a very respectable rating. Symonds finds with Pintner's test an I.Q. of approximately 99.3. Miss Murdock finds them rating high in a morality test.

In 1922, Kubo translated the revised Binet into the Japanese language. Porteus (**83**) found the Japanese about equal to the Chinese when studied with the Binet. Miss Murdock finds them better in non-language tests than in language intelligence tests.

The only tests given to Hindus were by Waugh (**103**) and Herrick (**40**). The former used various psychological tests and found

TABLE III.

SHOWING KINDS OF TESTS USED SINCE YEAR 1916.

	1917	1918	1919	1920	1921	1922	1923	1924	Total
Ind. Int.	2	1	0	2	2	9	0	2	18
Group Int.	0	0	3	3	5	6	8	12	37
Psy. Ind.		0	0	0	0	0	1	0	1
Psy. Group.		1	2	1	3	4	4	2	17
Total.	2	2	5	6	10	19	13	15	73

the Hindus slightly better than the Chinese with whom he compared them. The latter studied Brahmins and Panchama students with the Goddard form-board and found both of them inferior to a white performance.

These studies taken all together seem to indicate the mental superiority of the white race. There may be some question, however, about the indicated intellectual inferiority of the yellow races. Altogether, it may be said that the investigators recognize that these experimental results are crude and so they must be taken tentatively. Nevertheless, they and all similar studies have real value, since they are the beginnings of the application of scientific method to the problem of racial psychology.

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DISCUSSION

REACTION TIME EXPERIMENTS

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In a "General Review of Reaction Time Measurements" (1), H. M. Johnson makes rather extended comments on the report of an investigation made by M. Elliott in 1920 and published in 1922 (2). From the nature of the criticisms made the reviewer is apparently laboring under a misunderstanding of the experimental conditions and results obtained. The starting point of this investigation was the fact in physiological optics, established by a long line of experimenters, but most clearly proven by the work of Bell (3) and Luckeish (4), that monochromatic light gives greater acuity of vision than white light, or continuous spectra light approximating white; also, that mercury vapor light closely approximates monochromatic light in this respect. This fact naturally suggested inquiry whether other visual effects, such as speed of discrimination and cognitive reaction time, might not accompany this increase in acuity; hence the experiments.

Briefly describing the apparatus, the reviewer states that "the stimuli were four-place numbers printed on 'white' paper. . . . The reflectivity of none of the surfaces is given." The quotation marks are an intimation that "white" is an indefinite or unscientific term. The quotation is incomplete; what was said in the report was "white bond paper." Mr. Johnson has evidently overlooked the fact that the differences in the coefficients of reflection of different makes of white bond paper are so small as to be practically negligible in any case, and for the purposes of this experiment absolutely without significance. The same applies to carbon black printing ink having a mat surface. Furthermore, the reflectivity of the surfaces in the visual field remained constant throughout the series of experiments, and as comparative results were sought the reflection coefficients had no influence whatever on the significance of the results obtained. There are too many unsolved problems awaiting the experimenter to justify any needless work on unnecessary details.

The reviewer states that the " chronograph was started when the stimulus was exposed, and was stopped by the subject's pressing a reaction key to indicate he had 'cognized the number.' " This is an error due to a misreading of the report. The chronograph was started at the beginning of a series of observations which consisted in reading in succession 120 of the four-place numbers and was stopped when the series was finished. The elapsed time of each observation was recorded in the usual manner as a distance between two " jogs " in the line traced by the recording pen. This method was used to facilitate computations, which was a matter of considerable practical importance owing to the large number of observations—some 47,000 in all. The instrumental errors were carefully determined, and found to be well within the requisite limits of accuracy. (See report.)

I must again quote somewhat at length from the review:

"After the subject had reacted, he pronounced the number to the experimenter, and if the response was correct the fact was taken as evidence that the subject had cognized the number at the instant he pressed the key or at a constant interval theretofore or thereafter. This assurance appears to have come through the channels of faith. To those lacking this medium of knowledge the weakness of the assumption would tend to invalidate any results which might be based on it. The use of an apparatus in which reaction is registered vocally by means of a voice- or lip-reaction key, actuated by the subject in pronouncing the number, would have lent greater weight to the results."

In the experiment the disappearance of the stimulus was simultaneous with the observer's touching the reaction key. To make it possible for the observer to repeat the number after it had disappeared, it was necessary for the stimulus to have been fully cognized. Ability to repeat the number thereafter operated as the physical check on the cognition. It is therefore impossible for the key to have been pressed *prior* to cognition. This disposes of one of the matters of " faith " by supplying the " medium of knowledge " which the reviewer overlooked. The other measure of faith was supposed to be the assumption that the key was pressed at a constant interval *after* cognition. The reviewer suggests that the use of a voice- or lip-reaction key actuated by the subject in pronouncing the number would have removed this source of doubt. He fails to explain why the muscles actuating the vocal organs or the lips are more trustworthy in this respect than the muscles actuating the fingers. The " medium of knowledge " necessary to prove this seems to be hope-

lessly lacking. If it cannot be assumed that a given muscle will react within a sensibly constant period in response to a given stimulus under given conditions then all reaction time experiments are worthless.

In discussing the case further the reviewer gives the following quotation from the experimental report:

"Preference for any one kind of light might affect results, but in this case the effects would necessarily be very marked, and would undoubtedly appear as wide and erratic differences in the reaction times. The fact that no such fluctuations appeared, but on the contrary the recorded times show a remarkable consistency, is sufficient evidence that they were not subject to the influence of prejudice."

He then offers as his criticism that the subjects might be operating under a preferential neuromuscular set which might express itself in a "consistently unequal preparedness for reception and reaction." The control of this factor is asserted by the reviewer to be of such importance as to invalidate any results obtained without giving it equal consideration with the control of the environmental situation.

Obviously this criticism reduces itself to a question of probability. The reviewer states that it is possible that the attitude of the observers toward the different lights might consistently influence the results. The reasons, set forth in the quotation from the report, still appear valid for believing that there could be no intentional or even conscious purpose operative. It is true that the nervous system, by virtue of its own bias, can direct and guide the course of consciousness, though the means of doing so are not themselves represented in consciousness; but the probability that such a predisposition existed in the present case and influenced the results is not so certain. In any case there is no reason to assume that a bias should be operative in favor of mercury vapor light, rather than either of the others used in the experiment, since mercury vapor light is a type of artificial illumination, highly unpleasant to many people, owing to its distortion of colors. The more logical assumption would be that the observers' neuromuscular set would be operative in such a direction as to favor either of the two other lights used in the experiment, especially daylight, to which they were naturally accustomed.

In conclusion, any attempt to invalidate experimental results by making a broad charge of commercialism is necessarily an appeal to personal opinion and not to fact. The evidence of experimentation must either stand or fall upon its own merits and not upon the manner in which the facts revealed may subsequently be used.

Furthermore, a series of observations extending through a period of eight months, under all variations of order of performance, seasons, times of day, and previous conditions of mental and physical labor of the observers, in the results of which they could have no possible pecuniary or other interest affecting their personal welfare, and which shows consistent results throughout, has at least a presumption of correctness in its favor, and must stand until conclusive experimental proof to the contrary is presented.

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REACTION TIME EXPERIMENTS; A REPLY

BY H. M. JOHNSON

Ohio State University

One point in the foregoing criticism I regard as important. What is to be the criterion of "cognition," that we may say at what time it has been accomplished?

My thesis is that a stimulus, such as a group of printed characters, may be regarded as having been "cognized" when, and not until, the patient shall have made a specific response to it. By the term "specific response" I mean a response which is different from the response which any other stimulus would arouse. One form of response which is suitable is vocal—the naming of the stimulus. It is capable of definite registration on the timing apparatus; it is quickly executed; it is socially acceptable. Had such a specific reaction been chosen to actuate the timing mechanism, and a vocal key used to record it, the temporal interval between stimulus and response would have represented the time required for cognition; subject, perhaps, to certain constant corrections which vanish in differential, though not in relative, comparison. The reaction chosen, namely, that of pressing a key, is not a specific one with respect to the several stimuli employed, and hence cannot be taken as marking the instant at which

any actual specific response was effected. Neither is there any means of ascertaining the temporal separation of the nonspecific reaction from the specific one.

I am not greatly impressed by the argument that the disturbance in the reaction-arcs which yielded the cognitional response could not have been started while the stimulus was exposed, and completed after the stimulus was covered. The duration of a flash of lightning, for example, is extremely short; and the simplest manual, postural or vocal response which it arouses is not completed until some tenths of a second have followed upon the flash.

My appraisal of Miss Elliott's data is based on the mode of experimentation she used, and not on the place in which the work was done, or the sources, if any, from which her remuneration was derived. My criticism of the advertising propaganda based on the experiment, springs from the fact that the data do not warrant the conclusions which have been drawn from them. It does not imply that a valid experiment would, necessarily, yield or fail to yield evidence of superiority of mercury-vapor light over tungsten in respect of speed of excitation. From consideration of some facts I should expect such a superiority; from consideration of other facts the contrary. The problem is of sufficient importance to justify a decisive test. The results from this one are irrelevant.

DEFINITIONS AND DELIMITATIONS OF PSYCHOLOGICAL TERMS, III

PREPARED BY A COMMITTEE OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION

The two previous reports of this committee were published in the PSYCHOLOGICAL BULLETIN, **15**, pp. 89–95, and **19**, pp. 230–233.

The difficulty of reaching a unanimous decision regarding the exact wording of certain definitions has entailed lengthy correspondence and is responsible for the delay in preparing the present report. The committee felt that in the circumstances any further extension of its work was not feasible. Accordingly, at the 1923 meeting of the Association it asked to be discharged, which was so ordered. The Association authorized the publication of this final report, but is in no way committed to approve of the definitions.

TERMS CONSIDERED BY SUBCOMMITTEE: G & R

XI

52. **Cognition:**
    - *a.* The *process*[1] or function of noting and distinguishing *objects.*
    - *b. Awareness* of *objects.*

53. **Cognitive:**

    Pertaining to *cognition.*

54. **Perception:**
    - *a. Awareness* of *objects,* qualities, or relations sensibly presented.
    - *b.* Interpretation of a complex present *experience* comprising both sensory and *ideational elements* by means of organized earlier *experiences.*
    - *c.* Attentive *awareness* of some present unified *experience.*
    - *d. Awareness* of the truth of a proposition.
    - *e. Awareness* of esthetic, ethical, or practical values in *objects,* situations, or events sensibly presented.

[1] Italicized words are used as defined in this or previous reports.

f. Sensory *awareness* of an *object* believed or assumed to be present at the given moment in such a manner that the *awareness* is, or could be, involuntarily shared with other *subjects.*

COMMENT: *Perception*[a] is sometimes termed "sense perception." *Perception*[d] and [e] represent historical usages of the term. According to more recent usage [b] may be construed to include both [d] and [e].

55. **Perceptual:**
Pertaining to *perception.*

56. **Apperception:**
a. Focused *perception* exhibited in the relative clearness of certain *sensory experiences* as compared with others.
b. The synthetic function of *mind* involving mutual modification of the presented *object* and preëxisting *mental dispositions.*

COMMENT: The term is disappearing from usage. It has had special historical significance in the writings of Leibniz, Kant, Herbart, and Wundt, and is current in the works of W. McDougall, Stout, Ward, and Warren.

57. **Apperceptive:**
Pertaining to *apperception.*

58. **Image:**
a. An *item of consciousness* in which the sensory elements of a *perceptual experience* recur in the absence of the original sensory stimulation.
b. An *object,* quality, or relation cognized but not directly presented by the *environment* at the given moment.

59. **Imaginal:**
Pertaining to *image.*

60. **Imagery:**
Images taken collectively.

61. **Idea:**
a. An *awareness* of any *object* not directly presented by the *environment* at the given moment.
b. The mental structure which in *cognition* selects and interprets its *objects.*
c. Complex *objects* and systems of relations cognized non-*perceptually.*
d. Synonym for *item of consciousness, mental process*[b], *experience*[a], *presentation*[b].

62. **Ideation:**

The *mental process* in which use is made of *images* and *ideas*.

63. **Ideational:**

Pertaining to *ideation* or to *idea*.

64. **Presentation:**

a. Any kind of immediate *experience* having an objective character.

b. Any *psychical object*—sensation, *perception*, *image*, concept, etc.

c. The *object* in the special form in which it actually appears in *perception* as distinguished from its *representation* in *idea*.

d. The *object* in the special form in which it appears at the moment of attending to it.

e. The function or *process* by which the *object* in any of the above senses is set before or presented to the *subject*.

COMMENT: The term is fairly equivalent to the German "*Vorstellung*." It is more characteristic of English systematic works than of American treatises. Stout uses it in sense [a] and Ward in sense [b].

65. **Presentative:**

Pertaining to *presentation*.

66. **Representation:**

a. The recurrence of a *presentation*.

COMMENT: Properly a re-*presentation*.

b. The *awareness* of an *object* which is not being sensibly perceived at the given moment; *idea*[a].

c. The mental *image*, sign, or symbol of an *object* which is not actually present in *perceptual experience*.

67. **Representative; Representational:**

Pertaining to *representation*.

68. **Imagination:**

a. The rearrangement of past *experience* into new connections or combinations.

b. An *idea* or group of *ideas*[b] together with a feeling of strangeness, or with the absence of the feeling of familiarity.

c. *Awareness* of an *object* which is believed or assumed to be present at the given moment and which is *experienced* in such a manner that the *awareness* is not involuntarily shared with other *subjects*.

69. **Imagination; Imaginational:**

Pertaining to *imagination*.

70. **Memory:**

a. *Consciousness* of past *experience* as past.

b. All influence from past *experiences* that *consciously* or *unconsciously* tends to affect present *experience*.

c. An *experience* which reproduces a former *presentation*, but which is not itself a *presentation*[a] or [c].

71. **Memorial; Mnemonic:**

Pertaining to *memory*.

72. **Recognition:**

a. *Perception* of an *object* together with a feeling of familiarity.

b. *Awareness* of an *object* as one that has been *experienced* before.

73. **Recognitive; Recognitional:**

Pertaining to *recognition*.

74. **Intellect:**

a. The capacity of conceptual knowledge.

b. The *cognitive* aspect of the *mind* involving the complex organization of its innate and acquired *cognitive* capacities; the capacity of knowledge.

c. The capacity to analyze and discriminate *objects*, situations, and events with respect to the relations involved in them.

75. **Intellectual:**

Pertaining to *intellect*.

76. **Intellection:**

a. The *process* of conceptual knowing.

b. The *process* of knowing; *cognition*[a].

77. **Intelligence:**

a. Ability to learn and to utilize in new situations knowledge or skill acquired by learning.

b. Selective adaptation through acquired knowledge.

78. **Intelligent:**

Implying or possessing *intelligence.*

79. **Thought:**

a. The *cognitive* function in general.

COMMENT: An historical usage, cf. Descartes' "*penser.*"

b. Cognition above the *perceptual* level.

c. Cognition implying abstract concepts, or *consciousness* of universals.

d. Awareness that an *object* has this or that quality, relation, or reference.

COMMENT: Concidered as *mental element.* Cf. Bühler's "*Bewusstheit dass.*"

e. Symbolic use of *ideas* and *attitudes* in the solution of a problem or in the execution of a task.

f. A general term which is used to designate the more complex form of non-*perceptual awareness,* e.g. *ideation, imagination, intellection, representation.*

With the exception of 61[b], to which Miss Calkins files an objection, these definitions and delimitations are unanimously accepted by the members of the committee as representing current and, in some cases that are noted, historical usage.

HOWARD C. WARREN, *Chairman*
MARY W. CALKINS
KNIGHT DUNLAP
H. NORMAN GARDINER
CHRISTIAN A. RUCKMICK

SULLIVAN, W. C. *Crime and Insanity*. N. Y.: Longmans, Green, 1924. Pp. 259.

Crime and Insanity is an expansion of the matter of a series of lectures delivered by the author during the past three years as part of the course of post-graduate psychiatry at the Maudsley Hospital. It was written primarily to fill a need for a textbook dealing specifically with the nature and extent of the influence of psychopathological conditions in the causation of those disorders of social conduct which come within the purview of the criminal law.

In the introductory chapter we find a very sane discussion of crime as a biosocial problem and a critical examination of some of the criminological theories. The essential fallacies of purely biological theories of crime are clearly indicated and the dangers of the method of investigation applied to "criminology in the mass." The conclusion is reached that when we go behind the general terms of *crime* and *criminal* to the actual facts which these terms connote, the only reliable method of investigating the biological factors of criminal conduct must be the slow and tedious way of clinical observation.

In a second chapter there is presented a rough psychological classification of indictable offenses. Crimes are classified under the following heads: Crimes of Acquisitiveness, Crimes of Violence, Crimes against Morals, Attempted Suicide, Arson and Malicious Damage and "Other Offenses." A table (adapted from the report of the Home Office) is presented which shows that 91.8 per cent of crimes fall in the first group—Crimes of Acquisitiveness. The relation of each of the three first categories of crime to insanity appears roughly, statistically, as follows: "Of persons guilty of crimes of violence, on the average, one is found insane in every twenty-seven; in crimes of lust, the proportion is one in every 160; in crimes of acquisitiveness, one in every 700." The relation of insanity to crime appears, thus, more important from a qualitative than from a quantitative point of view; insanity is responsible for only a trivial proportion of acquisitive crime, and therefore of criminality as a whole, but the categories of crime in which its influence is most considerable are the categories of gravest social and ethical importance.

The major portion of the book is devoted to a discussion of each of the major clinical forms of mental disorder, and an examination of the types of criminal conduct which are apt to occur in connection with each of them. A chapter is devoted to crime in each of the following mental disorders: *General Paralysis, Senile Insanity, Alcoholism, Manic-Depressive Insanity, Dementia Precox, Systematized Delusional Insanity, Epilepsy, Transitory Conditions of Mental Disorders, Hysteria, Congenital Mental Deficiency,* and *Moral Imbecility.* Illustrative case studies (fifty-two in all) appear in each of these chapters.

Following this survey of the facts of morbid crime, the practical problem of the relation of mental disorder to criminal responsibility is considered. There is a brief discussion of the nature and object of legal punishment in general, followed by a review of the evolution of the attitude of the English law concerning the effect of insanity on criminal responsibility. A final chapter, *Morbid Crime and Social Security,* offers a critical examination of the legal viewpoint concerning criminal responsibility from the point of view of the psychiatrist.

Although this book was produced by an English alienist, and in its purely legal aspects is concerned with the situation in England alone, yet in all other respects it has a universal applicability. It is admirably adapted for its original purpose, that of a textbook in morbid crime, and, in addition, the discussions are sufficiently nontechnical in style to be of value to the layman as well as to the two professions directly concerned, the medical and the legal.

ALICE M. JONES

University of Pennsylvania

PIERCE, FREDERICK. *Our Unconscious Mind.* N. Y.: Dutton, 1922. Pp. xi+323.

Mr. Pierce is no stranger to the lecture platform, and this book shows his ability to serve the popular taste, without, however, undue care to prevent a possible consequent indigestion. He concocts a pot pourri of psychoanalytic principles, endocrinology, and especially autosuggestion, and adds chapters on applications to the individual, the group, and to business (advertising and selling). This is done with an enthusiasm that carries him over gaps and disputed points, and with a flourish that includes the capitalization of such terms as "Unconscious," "Libido," "Censor," and "Ego Maximation."

While acknowledging freely his indebtedness to Freud (and hop-

ing for the day of autoanalysis), the author finds in the work of Coué and Baudouin the most effective means of directing unconscious activities. Very important here is the establishment of a conditioned reflex (" response-model "), which ultimately requires a minimum of attention. The " law of dominant affect " is presented as an addition to autosuggestion technique: "A suggestion, to get into action, has got to stimulate an affect which is strong enough to overcome any other then present, and thus preëmpt the right of way. The affect necessary to make any given suggestion become dynamic must supervene above all others and appropriate sufficient energy to dominate the conduct of the Unconscious " (p. 111).

More than half the book is taken up with practical applications of the " Unconscious," and in this connection the author has much of interest and sense to say, particularly concerning individual development and social problems.

R. W. HALL

St. Elizabeths Hospital

FIELDING, WILLIAM J. *The Caveman Within Us.* N. Y.: Dutton, 1922. Pp. xv+372.

This book, adapted to the lay reader, has for its thesis the dual nature of the personality, the primitive and the intellectual, and maintains that most of the ills of mankind are due to conflict between these components, and that an understanding and adjustment of this problem will add greatly to health and efficiency.

The author skims over the field opened up by psychoanalysis, and reviews in an interesting manner the history and workings of the primitive mind in the individual and in society. Probably superficiality is unavoidable in such a presentation, but certain topics—" insanity," for example—are treated with a cursoriness and with a generalization that are regrettable. Statements like, " It is always an unbearable emotional shock, or series of shocks, which produces the trauma or psychic wound resulting in insanity " (p. 185), and "As a general rule, the more thoroughly insane the person is, the more infantile he becomes in his actions " (p. 184), are liable to be misleading. Then again, to say (p. 102) that shell-shock " has to be abnormal, because it has been produced by a combination of abnormal circumstances," is scarcely illuminating.

Numerous illustrations are used throughout the book, and the great majority of them are pertinent and useful. There are exceptions, however. In the chapter on " The Caveman and the Genius,"

for instance, we are told shortly that Sir Joshua Reynolds, Heine, DeFoe, Copernicus, and Wickliffe were victims of paralysis or apoplexy. Just how this is a manifestation of the primitive mind, and goes to prove the presence of dual personality, is not so evident. The former may be true, though perhaps in a way the author does not appreciate. The point is a small one, but it exemplifies a tendency to sketchiness which is found elsewhere.

Mr. Fielding is well read, and his book is informative and helpful; it is much better than the title might indicate.

R. W. HALL

St. Elizabeths Hospital

ISABEL DAVENPORT. *Salvaging of American Girlhood.* N. Y.: Dutton, 1924. Pp. ix+302.

The book is based on the analysis of the tabulated questions obtained from 160 college girls, who submitted them with the assurance that they would be used anonomously.

This piece of research proves conclusively that a gross ignorance on matters of sex exists even among those whose environmental conditions have been above the average.

It is excellent propaganda in that it gives to the lay person some idea of the pathetic ignorance, resulting in warped ideas, which prevails among the majority of girls.

The author presents a solution for education along these lines which is theoretical but entirely possible.

M. C. BROOKE

University of Pennsylvania

PYLE, WILLIAM H. *Psychological Principles Applied to Teaching.* Baltimore: Warwick & York, 1924. Pp. vi+197.

The author believes that psychology has been of very little use to teachers because the "psychologists have not been sufficiently clear in their statement of principles, and have not been specific and definite in the application of the principles to concrete situations that arise in teaching." This statement is undoubtedly true, and it seems to the reviewer that one of the troubles has been that psychologists have not been willing to state the psychological principles without a great deal of argumentation in justification of their position.

Pyle, in the present volume, lists some 115 principles of educational significance in truly axiomatic form. They represent the con-

clusions which can be drawn from the great mass of work which is extant on the psychology of learning. After each statement of principle, the author gives a half dozen or more short paragraphs outlining educational situations to which the principle applies. A cross-reference to the different school subjects mentioned in the applications is very helpful.

This book should summarize and put in definitely usable form the material which the teacher has obtained in courses in general and in educational psychology, and by so doing should be of very great value.

SAMUEL W. FERNBERGER

University of Pennsylvania

STEDMAN, L. M. *Education of Gifted Children.* N. Y.: World Book, 1924. Pp. viii+192.

This book is the author's report on the results of a five-year teaching experiment in the "opportunity class" for gifted children, begun January, 1918, in the Training Department of the Los Angeles State Normal School.

Miss Stedman discusses very fully the practical problems encountered in the organization of such a class. She presents a most interesting series of case studies of the individual children composing her group, and presents in tabular and graphic form the comparative results of Binet test and retest, the Army Alpha, the Terman Group Test of Mental Ability, and a complete series of educational achievement tests. She has not, moreover, neglected the "human" side of her cases, and has presented a study of each child from the point of view of personality and social adjustment.

The last part of the book is given over to a discussion of group projects and activities. Since the methods of teaching the superior child are still largely in the experimental stage, Miss Stedman's rather detailed account of the methods which she has found most useful in the opportunity class represent a rather important educational contribution. The samples of the children's work which she presents are conclusive arguments in favor of the segregation of gifted children, in order that their originality may find adequate means of expression.

In a final chapter, Miss Stedman has summarized her conclusions concerning the nature of the superior child, and the most important factors to bear in mind in planning his educational program. Since

these conclusions are the result of practical experience, no educator who has in mind a like teaching experiment can afford to ignore them.

ALICE M. JONES

University of Pennsylvania

PINTNER, RUDOLF. *Intelligence Testing: Methods and Results.* N. Y.: Holt, 1923. Pp. v+406.

The author divides this treatise on Intelligence Testing into three parts: An Historical and Theoretical section; a section on Methods; another on the Results of Intelligence Testing. Each chapter is followed by a bibliography on the material covered in the chapter.

The first section includes a brief but well-developed account of the early history of intelligence testing, an appreciative description of the life of Binet, and a discussion of intelligence testing after Binet. A final chapter is devoted to the discussion of general intelligence, including a necessarily brief but clearly presented treatment of the various definitions of intelligence—its growth, distribution, methods of expressing intelligence ratings, and the fundamental principles involved in the standardization of intelligence tests.

A long chapter in the section on "The Scales" is devoted to a discussion of the various scales used in individual testing, with comments on each. No attempt is made to describe the innumerable intelligence tests that have not been combined in some special manner for obtaining an intelligence rating—generally of mental age. In addition to describing the original Binet scale and its American revisions, the author briefly describes the Pintner-Patterson performance scale, the Porteus scale, the De Sanctis scale, and a few others not directly based on Binet's work, as well as a few of the foreign scales. In spite of the author's explanation and his cross-references to Whipple's "*Manual of Mental and Physical Tests*," the inclusive title of the book and the author's injunction that the "psychologist should be a master of all his tools and not a slave to any" suggests the need in this volume for at least a brief discussion of performance tests which, although they have not been included in scales, are nevertheless proving of great value in the measurement of intelligence.

The second chapter in this section is devoted to a discussion of the construction and a short description of group tests in common use. The chapter includes a table of age norms and grade norms for approximately twenty group tests which can be found very serviceable for comparative purposes.

Section 3 is devoted to a description of the various fields in which mental tests have been successfully used and a summary of the chief results in each field. Here the author discusses the results of mental tests applied to the feebleminded, the superior, the soldier, the school child, the delinquent, the dependent, the deaf, the blind, the negro, the foreign-born, and the employee. A chapter is devoted to each field and in each chapter is critically summarized the more important work which has been done in that field. The treatment is necessarily sketchy, but the relatively complete bibliography at the end of each chapter points the way to further knowledge for the interested student and layman. A final chapter is devoted to a discussion of the inheritance of intelligence.

This little volume on "Intelligence Testing" might be described as a handbook for the clinical psychologist. The point of view is not essentially clinical, but there is described in it a great deal of the material which the clinical psychologist must use and there are discussed findings with which he should be acquainted. The book might even be called a "Baedeker" of intelligence testing. It resembles a Baedeker not only in pointing out the high spots in intelligence testing, but in starring those which the author considers most important. With certain conclusions upon which the author places his star or even triple star of approval the reviewer disagrees. He feels, moreover, that a more impartial presentation of opinions (where there are differences) would have better served the purposes of this handbook, but even this fault does not detract seriously from the usefulness of this well-organized and well-written treatise.

MORRIS S. VITELES

University of Pennsylvania

MAXWELL, SAMUEL STEEN. *Labyrinth and Equilibrium*. Phila.: Lippincott, 1923. Pp. 163.

The aim of this volume is "to present an objective study of the equilibrial reactions of vertebrate animals and the mechanisms through which these reactions are produced." The author does practically all of his experimental work on selachians because the structures in question in these animals are large and easily reached by operative means.

The psychologist will find in the monograph no description of the consciousness which may be involved in the equilibrial reactions. The author does not believe that it is "necessary or desirable to

attempt to imagine the sensations of the experimental animal." From the psychological standpoint this work appeals primarily to those who are interested in comparative psychology in a purely objective way.

At the beginning of each chapter the author cites literature bearing on the particular question discussed in that chapter. He does not confine himself to simply summarizing the literature but discusses the technique and conclusions in a critical way. At the end of the monograph 249 references are listed, but the author states that "articles based wholly on clinical or psychological data have mostly been omitted."

The author first discusses compensatory motions and positions. His work is concerned with the dogfish. He lists the various movements and positions which the animal assumes when it is rotated around the three primary axes: the longitudinal, the transverse, and the vertical. "The effects of rotation in planes other than the primary are readily resolved and are seen to be the resultant of simultaneous rotations around more than one of the primary axes."

The next topic is that of forced positions and forced movements which are ordinarily observed as a result of injury to some part of the nervous system. He finds that many of these forced positions and movements may be caused by retinal and contact stimuli, and by holding the animal in certain positions. Of course, in the case of injury to the nervous system the forced position is more or less permanent while those induced by stimuli are temporary, lasting only as long as the stimulation.

With reference to the labyrinth as a whole, the author discusses the experiments which have been done in which one labyrinth was destroyed and those in which both labyrinths were extirpated. A great deal of work has been done along this line. The destruction of one is accompanied by forced positions and movements which, in general, are well known.

Maxwell finds that the destruction of both labyrinths in the dogfish does not cause any marked disturbances in the activity of the animal so long as it is not excited and is in a healthy condition. Loss of orientation occurs, however, in a labyrinthless animal if it is excited or is fatigued. Compensatory movements of the eyes and fins do not occur upon rotation of such an animal. Occasionally movements of the eyes are seen under such circumstances but the author believes that they are due to retinal stimulation.

It has been found by various investigators that, in many animals, certain other stimuli will produce reactions similar to those produced

by the stimulation of the labyrinth. The author found that tactual stimuli caused a movement of the tail and the fins of the fish. In many animals it is also found that retinal stimulations will produce various compensatory movements. A third source of such movements are the muscles and joints. For example, if the head of a dogfish is held so that there is no dynamic stimulation of the semicircular canals, and the tail is bent to one side, the eyes will turn immediately. The author points out the necessity of carefully distinguishing between such movements as these and those produced by the labyrinth.

The author studies the functions of the semicircular canals in two ways: (1) by stimulation; (2) by extirpation. He found that he could produce all the compensatory movements of rotation by mechanical stimulation of the various ampullae in the inner ear.

As he points out, however, we cannot "conclude from this that no other mechanism exists in the ear for the production of these movements."

The extirpation of the ampullae showed that such other mechanisms exist, for it is found that all compensatory movements except those in response to rotation in the horizontal plane can take place in the absence of the ampullae.

The next mechanism examined was the otoliths. The same two methods were applied to these as to the ampullae. The author found that in the animals upon which he worked there was no indication of a sharp differentiation of function between the otolith-bearing vestibular portion of the labyrinth and the semicircular canals. He also found that when all otoliths and all ampullae were removed the fish lost all compensatory movements and its geotropic reactions.

By means of stimulating the otoliths the author found evidence to indicate that the adequate stimulus for the sensitive cells in the vestibule is not a direct pressure of the otoliths upon them as commonly supposed, but rather a shifting of the otoliths. Furthermore, the direction of the compensatory movements to such a stimulus is determined by the direction of the displacement.

In a chapter on "The Mechanism of the Dynamic Functions of the Labyrinth" the author opposes the idea of Mach and others that the sensitive cells of the ampullae are stimulated by means of a current of endolymph in the canals owing to the inertia of that fluid when the head is rotated. On the basis of several experiments and the construction of a model, he comes to the conclusion that the sensitive portions of the ampullae are stimulated by the tension put upon

them when the head is rotated, due to the peculiar arrangement of cavities and membranes in the vestibule.

In the last two chapters of the monograph the author discusses the tonic effect of the labyrinth upon the muscles of the animal and a brief discussion of the phenomenon of nystagmus.

W. T. HERON

University of Kansas

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